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<130> PP019766.0003

<150> PCT/US2003/029167

<151> 2003-09-15

<150> US 60/410,839

<151> 2002-09-13

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<213> Streptococcus agalactiae

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<213> Streptococcus agalactiae

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<213> Streptococcus agalactiae

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<213> Streptococcus agalactiae

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<211> 680

<212> PRT

<213> Streptococcus agalactiae

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Gly Gln Val Lys Pro Asp Asn Ser Ala Ala Leu Thr Thr Val Asp Thr
 65           70           75           80
Pro His His Ile Ser Ala Pro Asp Ala Leu Lys Thr Thr Gln Ser Ser
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115          120          125
Thr Ser Glu Glu Leu Val Asn Met Ala Tyr Asp Ile Ile Ala Lys Glu
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Glu Glu Ala Arg Lys Leu Lys Asp Thr Asn Gln Pro Phe Leu Gly Val
165          170          175
Pro Leu Leu Val Lys Gly Leu Gly His Ser Ile Lys Gly Gly Glu Thr

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<211> 1134

<212> PRT

<213> Streptococcus agalactiae

<400> 12

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<212> PRT

<213> Streptococcus agalactiae

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		180						185						190	
Glu	Glu	Glu	Phe	Asn	Ile	Asp	Glu	Val	Val	Ser	Asn	Val	Arg	Ala	Gly
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Tyr	Ala	Ala	Gly	Lys	His	His	Gln	Ile	Ile	Val	Leu	Ala	Glu	Gly	Val
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225				230						235				240	
Ser	Asp	Leu	Arg	Val	Thr	Asn	Leu	Gly	His	Leu	Leu	Arg	Gly	Gly	Ser
			245						250					255	
Pro	Thr	Ala	Arg	Asp	Arg	Val	Leu	Ala	Ser	Arg	Met	Gly	Ala	Tyr	Ala
		260						265					270		
Val	Gln	Leu	Leu	Lys	Glu	Gly	Arg	Gly	Gly	Leu	Ala	Val	Gly	Val	His
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Ala Leu Phe Ser Leu Thr Asp Glu Gly Lys Ile Val Val Asn Asn Pro  
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 Gln Ser Ser Lys  
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 <212> DNA  
 <213> Streptococcus agalactiae

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 gatatacaatc ttattttatcc tgagacaaca ctgacagtaa cttacgatca gaagagtcac 300  
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 <213> Streptococcus agalactiae

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 Arg Thr Val Ser Glu Val Lys Ala Asp Leu Val Lys Gln Asp Asn Lys  
 35 40 45  
 Ser Ser Tyr Thr Val Lys Tyr Gly Asp Thr Leu Ser Val Ile Ser Glu  
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 Ala Met Ser Ile Asp Met Asn Val Leu Ala Lys Ile Asn Asn Ile Ala  
 65 70 75 80  
 Asp Ile Asn Leu Ile Tyr Pro Glu Thr Thr Leu Thr Val Thr Tyr Asp  
 85 90 95

Gln Lys Ser His Thr Ala Thr Ser Met Lys Ile Glu Thr Pro Ala Thr  
 100 105 110  
 Asn Ala Ala Gly Gln Thr Thr Ala Thr Val Asp Leu Lys Thr Asn Gln  
 115 120 125  
 Val Ser Val Ala Asp Gln Lys Val Ser Leu Asn Thr Ile Ser Glu Gly  
 130 135 140  
 Met Thr Pro Glu Ala Ala Thr Thr Ile Val Ser Pro Met Lys Thr Tyr  
 145 150 155 160  
 Ser Ser Ala Pro Ala Leu Lys Ser Lys Glu Val Leu Ala Gln Glu Gln  
 165 170 175  
 Ala Val Ser Gln Ala Ala Ala Asn Glu Gln Val Ser Pro Ala Pro Val  
 180 185 190  
 Lys Ser Ile Thr Ser Glu Val Pro Ala Ala Lys Glu Glu Val Lys Pro  
 195 200 205  
 Thr Gln Thr Ser Val Ser Gln Ser Thr Thr Val Ser Pro Ala Ser Val  
 210 215 220  
 Ala Ala Glu Thr Pro Ala Pro Val Ala Lys Val Ala Pro Val Arg Thr  
 225 230 235 240  
 Val Ala Ala Pro Arg Val Ala Ser Val Lys Val Val Thr Pro Lys Val  
 245 250 255  
 Glu Thr Gly Ala Ser Pro Glu His Val Ser Ala Pro Ala Val Pro Val  
 260 265 270  
 Thr Thr Thr Ser Pro Ala Thr Asp Ser Lys Leu Gln Ala Thr Glu Val  
 275 280 285  
 Lys Ser Val Pro Val Ala Gln Lys Ala Pro Thr Ala Thr Pro Val Ala  
 290 295 300  
 Gln Pro Ala Ser Thr Thr Asn Ala Val Ala Ala His Pro Glu Asn Ala  
 305 310 315 320  
 Gly Leu Gln Pro His Val Ala Ala Tyr Lys Glu Lys Val Ala Ser Thr  
 325 330 335  
 Tyr Gly Val Asn Glu Phe Ser Thr Tyr Arg Ala Gly Asp Pro Gly Asp  
 340 345 350  
 His Gly Lys Gly Leu Ala Val Asp Phe Ile Val Gly Thr Asn Gln Ala  
 355 360 365  
 Leu Gly Asn Lys Val Ala Gln Tyr Ser Thr Gln Asn Met Ala Ala Asn  
 370 375 380  
 Asn Ile Ser Tyr Val Ile Trp Gln Gln Lys Phe Tyr Ser Asn Thr Asn  
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 Gly Val Thr Ala Asn His Tyr Asp His Val His Val Ser Phe Asn Lys  
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<210> 19

<211> 2070

<212> DNA

<213> Streptococcus agalactiae

<400> 19

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catggtgcac ttgacaatac tggaacagca aatatgcctg atggaaaagt tgctaagtct	180
ggtactgctg ctcaattaga tgcttatatg gatgacgctc aaaaagattt caaacaact	240
aaccctaata gtgaaagcat tagggttcaa gcaggcgata tgggttgagc aagtccagcc	300
aactctgggc ttcttcaaga tgaaccaact gtcaaaaatt ttaatgcaat gaatgttgag	360

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gaagctgcaa	aacaagaaat	tgtagtggca	aatgttattg	ataaagttaa	caaacaaatt	540
ccttacaatt	ggaagcctta	cgctattaaa	aatattcctg	taaataacaa	aagtgtgaac	600
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 <212> PRT  
 <213> Streptococcus agalactiae

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 35 40 45  
 Thr Ala Asn Met Pro Asp Gly Lys Val Ala Asn Ala Gly Thr Ala Ala  
 50 55 60  
 Gln Leu Asp Ala Tyr Met Asp Asp Ala Gln Lys Asp Phe Lys Gln Thr  
 65 70 75 80  
 Asn Pro Asn Gly Glu Ser Ile Arg Val Gln Ala Gly Asp Met Val Gly  
 85 90 95  
 Ala Ser Pro Ala Asn Ser Gly Leu Leu Gln Asp Glu Pro Thr Val Lys  
 100 105 110  
 Asn Phe Asn Ala Met Asn Val Glu Tyr Gly Thr Leu Gly Asn His Glu  
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 Phe Asp Glu Gly Leu Ala Glu Tyr Asn Arg Ile Val Thr Gly Lys Ala  
 130 135 140  
 Pro Ala Pro Asp Ser Asn Ile Asn Asn Ile Thr Lys Ser Tyr Pro His



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Asn	Lys	Gln	Ile	Pro	Tyr	Asn	Trp	Lys	Pro	Tyr	Ala	Ile	Lys	Asn	Ile
		180		185		190									
Pro	Val	Asn	Asn	Lys	Ser	Val	Asn	Val	Gly	Phe	Ile	Gly	Ile	Val	Thr
		195		200		205									
Lys	Asp	Ile	Pro	Asn	Leu	Val	Leu	Arg	Lys	Asn	Tyr	Glu	Gln	Tyr	Glu
	210			215		220									
Phe	Leu	Asp	Glu	Ala	Glu	Thr	Ile	Val	Lys	Tyr	Ala	Lys	Glu	Leu	Gln
225				230		235									240
Ala	Lys	Asn	Val	Lys	Ala	Ile	Val	Val	Leu	Ala	His	Val	Pro	Ala	Thr
		245		250		255									
Ser	Lys	Asn	Asp	Ile	Ala	Glu	Gly	Glu	Ala	Ala	Glu	Met	Met	Lys	Lys
		260		265		270									
Val	Asn	Gln	Leu	Phe	Pro	Glu	Asn	Ser	Val	Asp	Ile	Val	Phe	Ala	Gly
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Gln	Ala	Leu	Ser	Gln	Gly	Lys	Ala	Tyr	Ala	Asp	Val	Arg	Gly	Val	Leu
305				310		315									320
Asp	Thr	Asp	Thr	Gln	Asp	Phe	Ile	Glu	Thr	Pro	Ser	Ala	Lys	Val	Ile
		325		330		335									
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		340		345		350									
Val	Asp	Gln	Ala	Asn	Thr	Ile	Val	Lys	Gln	Val	Thr	Glu	Ala	Lys	Ile
	355			360		365									
Gly	Thr	Ala	Glu	Val	Ser	Val	Met	Ile	Thr	Arg	Ser	Val	Asp	Gln	Asp
	370			375		380									
Asn	Val	Ser	Pro	Val	Gly	Ser	Leu	Ile	Thr	Glu	Ala	Gln	Leu	Ala	Ile
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		420		425		430									
Gly	Ala	Ala	Gln	Ala	Val	Gln	Pro	Phe	Gly	Asn	Ile	Leu	Gln	Val	Val
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Glu	Ile	Thr	Gly	Arg	Asp	Leu	Tyr	Lys	Ala	Leu	Asn	Glu	Gln	Tyr	Asp
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Thr	Asp	Asn	Lys	Glu	Gly	Gly	Glu	Glu	Thr	Pro	Phe	Lys	Val	Val	Lys
		485		490		495									
Ala	Tyr	Lys	Ser	Asn	Gly	Glu	Glu	Ile	Asn	Pro	Asp	Ala	Lys	Tyr	Lys
		500		505		510									
Leu	Val	Ile	Asn	Asp	Phe	Leu	Phe	Gly	Gly	Gly	Asp	Gly	Phe	Ala	Ser
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Phe	Arg	Asn	Ala	Lys	Leu	Leu	Gly	Ala	Ile	Asn	Pro	Asp	Thr	Glu	Val
	530			535		540									
Phe	Met	Ala	Tyr	Ile	Thr	Asp	Leu	Glu	Lys	Ala	Gly	Lys	Lys	Val	Ser
545				550		555									560
Val	Pro	Asn	Asn	Lys	Pro	Lys	Ile	Tyr	Val	Thr	Met	Lys	Met	Val	Asn
		565		570		575									
Glu	Thr	Ile	Thr	Gln	Asn	Asp	Gly	Thr	His	Ser	Ile	Ile	Lys	Lys	Leu
		580		585		590									

Tyr Leu Asp Arg Gln Gly Asn Ile Val Ala Gln Glu Ile Val Ser Asp  
 595 600 605  
 Thr Leu Asn Gln Thr Lys Ser Lys Ser Thr Lys Ile Asn Pro Val Thr  
 610 615 620  
 Thr Ile His Lys Lys Gln Leu His Gln Phe Thr Ala Ile Asn Pro Met  
 625 630 635 640  
 Arg Asn Tyr Gly Lys Pro Ser Asn Ser Thr Thr Val Lys Ser Lys Gln  
 645 650 655  
 Leu Pro Lys Thr Asn Ser Glu Tyr Gly Gln Ser Phe Leu Met Ser Val  
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 Phe Gly Val Gly Leu Ile Gly Ile Ala Leu Asn Thr Lys Lys Lys His  
 675 680 685  
 Met Lys  
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 <211> 1500  
 <212> DNA  
 <213> Streptococcus agalactiae

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<210> 22  
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 <212> PRT  
 <213> Streptococcus agalactiae

<220>  
 <221> VARIANT  
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<223> Xaa = Any Amino Acid

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Gln	Gly	Ala	Arg	Met	Ala	Thr	Val	Arg	Lys	Ala	Glu	Glu	Ile	Ala	Gly
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Gln	Lys	Val	Gly	Phe	Leu	Leu	Asp	Thr	Lys	Gly	Pro	Glu	Ile	Arg	Thr
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Glu	Leu	Phe	Glu	Asp	Gly	Ala	Asp	Phe	His	Ser	Tyr	Thr	Thr	Gly	Thr
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Lys	Leu	Arg	Val	Ala	Thr	Lys	Gln	Gly	Ile	Lys	Ser	Thr	Pro	Glu	Val
	115						120						125		
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130						135					140				
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Phe	Ala	Lys	Asp	Lys	Asp	Thr	Arg	Glu	Phe	Glu	Val	Val	Val	Glu	Asn
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	180							185					190		
Ile	Pro	Phe	Pro	Ala	Leu	Ala	Glu	Arg	Asp	Asn	Ala	Asp	Ile	Arg	Phe
	195						200					205			
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210					215						220				
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Gly	His	Val	Lys	Leu	Phe	Ala	Lys	Ile	Glu	Asn	Gln	Gln	Gly	Ile	Asp
			245						250					255	
Asn	Ile	Asp	Glu	Ile	Ile	Glu	Ala	Ala	Asp	Gly	Ile	Met	Ile	Ala	Arg
	260							265					270		
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	275						280					285			
Lys	Met	Ile	Ile	Thr	Lys	Val	Asn	Ala	Ala	Gly	Lys	Ala	Val	Ile	Thr
290						295					300				
Ala	Thr	Asn	Met	Leu	Glu	Thr	Met	Thr	Asp	Lys	Pro	Arg	Ala	Thr	Arg
305				310						315					320
Ser	Glu	Val	Ser	Asp	Val	Phe	Asn	Ala	Val	Ile	Asp	Gly	Thr	Asp	Ala
			325						330					335	
Thr	Met	Leu	Ser	Gly	Glu	Ser	Ala	Asn	Gly	Lys	Tyr	Pro	Val	Glu	Ser
	340							345					350		
Val	Arg	Thr	Met	Ala	Thr	Ile	Asp	Lys	Asn	Ala	Gln	Thr	Leu	Leu	Asn
	355						360					365			
Glu	Tyr	Gly	Arg	Leu	Asp	Ser	Ser	Ala	Phe	Pro	Arg	Asn	Asn	Lys	Thr
370						375					380				
Asp	Val	Ile	Ala	Ser	Ala	Val	Lys	Asp	Ala	Thr	His	Ser	Met	Asp	Ile
385				390						395					400
Lys	Leu	Val	Val	Thr	Ile	Thr	Glu	Thr	Gly	Asn	Thr	Ala	Arg	Ala	Ile
				405					410					415	

Ser Lys Phe Arg Pro Asp Ala Asp Ile Leu Ala Val Thr Phe Asp Glu  
420 425 430  
Lys Val Gln Arg Ser Leu Met Ile Asn Trp Gly Val Ile Pro Val Leu  
435 440 445  
Ala Asp Lys Pro Ala Ser Thr Asp Asp Met Phe Glu Val Ala Glu Arg  
450 455 460  
Val Ala Leu Glu Ala Gly Phe Val Glu Ser Gly Asp Asn Ile Val Ile  
465 470 475 480  
Val Ala Gly Val Pro Val Gly Thr Gly Gly Thr Asn Thr Met Arg Val  
485 490 495  
Arg Thr Val Lys  
500

<210> 23  
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<212> DNA  
<213> Streptococcus agalactiae

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atgaccgaac tatctgatgt atatggtgaa gagctgattt ctccattcac tattacagct 180  
ggtgatgaat ttcaagcttt attgaaacca tcaaaaaagg tatttcaa at tattgaccat 240  
attcaactag ctctaaaacc tggttaatgta aggttcggcc tcggtacagg aaacattata 300  
acatccatca attcaaatga aagtatcggg gctgatgggc ctgcctactg gcatgctcgc 360  
tcagctatta atcatatata tgataaaaaat gattatggaa cagttcaagt agctatttgc 420  
cttgatgatg aagacaaaaa ccttgaatta acactaaata gtctcatttc agctggtgat 480  
tttatcaagt caaaatggac tacaaccat tttcaaatgc ttgagcactt aatacttcaa 540  
gataattatc aagaacaatt tcaacatcaa aagtttagccc aactggaaaa tattgaacct 600  
agtcgcgtga ctaaagcct taaagcaagc ggtctgaaga ttacttaag aacgagaaca 660  
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<210> 24  
<211> 240  
<212> PRT  
<213> Streptococcus agalactiae

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Phe Gln Gln Ser Phe Gln Gln Leu Met Thr Glu Leu Ser Asp Val Tyr  
35 40 45  
Gly Glu Glu Leu Ile Ser Pro Phe Thr Ile Thr Ala Gly Asp Glu Phe  
50 55 60  
Gln Ala Leu Leu Lys Pro Ser Lys Lys Val Phe Gln Ile Ile Asp His  
65 70 75 80  
Ile Gln Leu Ala Leu Lys Pro Val Asn Val Arg Phe Gly Leu Gly Thr  
85 90 95  
Gly Asn Ile Ile Thr Ser Ile Asn Ser Asn Glu Ser Ile Gly Ala Asp  
100 105 110  
Gly Pro Ala Tyr Trp His Ala Arg Ser Ala Ile Asn His Ile His Asp  
115 120 125  
Lys Asn Asp Tyr Gly Thr Val Gln Val Ala Ile Cys Leu Asp Asp Glu

130	135	140
Asp Gln Asn Leu Glu Leu Thr Leu Asn Ser Leu Ile Ser Ala Gly Asp		
145	150	155
Phe Ile Lys Ser Lys Trp Thr Thr Asn His Phe Gln Met Leu Glu His		
165	170	175
Leu Ile Leu Gln Asp Asn Tyr Gln Glu Gln Phe Gln His Gln Lys Leu		
180	185	190
Ala Gln Leu Glu Asn Ile Glu Pro Ser Ala Leu Thr Lys Arg Leu Lys		
195	200	205
Ala Ser Gly Leu Lys Ile Tyr Leu Arg Thr Arg Thr Gln Ala Ala Asp		
210	215	220
Leu Leu Val Lys Ser Cys Thr Gln Thr Lys Gly Gly Ser Tyr Asp Phe		
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 <212> DNA  
 <213> Streptococcus agalactiae

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tatattatgt cccgaaatct tgaagtcatt aaagcttctg ttattgatgg attaacccct	180
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tcaggaaaaa ctatttcaga taccacaatc ctagctgccg ttaggaatgc tatggctggt	300
aatgagttaa atgctaagat gggactggtc tgtgcaacac caactgcagg tagtgcagga	360
tgtttaccag ctgtgatttc tacagccatt gaaaagctta atttaacaga agaagagcaa	420
cttgattttc tatttacagc cggcgcattt ggtctcgtca ttggtaataa tgcctctatc	480
tcagggtgcag aaggaggttg ccaagctgaa gttgggtcag ctagtgctat ggctgcggct	540
gctttagtta tggctgctgg aggtactcct ttccaagcta gccaaagctat agcatttggt	600
attaaaaata tgcttgact tatctgtgac cctgttgacg gtttagttga agtcccttgt	660
gtgaagcgga atgctcttgg atcaagtttt gcacttggtg ctgctgatat ggccttggt	720
ggtattgaat cgcaaattcc agtagatgaa gttattgatg caatgtatca agttggatca	780
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<210> 26  
 <211> 290  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 26
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Gly Arg Ser Arg Glu Glu Ile Arg Tyr Ile Met Ser Arg Asn Leu Glu
35 40 45
Val Met Lys Ala Ser Val Ile Asp Gly Leu Thr Pro Ser Lys Ser Ile
50 55 60
Ser Gly Leu Thr Gly Gly Asp Ala Val Lys Met Asp Gln Tyr Leu Gln
65 70 75 80
Ser Gly Lys Thr Ile Ser Asp Thr Thr Ile Leu Ala Ala Val Arg Asn
85 90 95
Ala Met Ala Val Asn Glu Leu Asn Ala Lys Met Gly Leu Val Cys Ala



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gataatctag actatgtgat tcttgtttct gctaatacagt ggacagacat gagttttatg 1740
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caagtcctct ctcgtaagc attggataat tctcctataa tattaggtag taaacaatta 1860
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<210> 28

<211> 731

<212> PRT

<213> Streptococcus agalactiae

<400> 28

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Ser Lys His Leu Tyr Lys Asn His Asp Ser Ile Leu Glu Ser Tyr Thr
 35           40           45
Gly Ser Ile Thr Ser Asp Pro Glu Val Pro Glu Gln Tyr Lys Asp Glu
 50           55           60
Thr Arg Asn Phe Lys Phe Ala Phe Thr Ala Phe Glu Glu Ala Leu Ala
 65           70           75           80
Ser Ser Gly Val Asn Leu Lys Ala Tyr His Asn Ile Ala Val Cys Leu
 85           90           95
Gly Thr Ser Leu Gly Gly Lys Ser Ala Gly Gln Asn Ala Leu Tyr Gln
100           105           110
Phe Glu Glu Gly Glu Arg Gln Val Asp Ala Ser Leu Leu Glu Lys Ala
115           120           125
Ser Val Tyr His Ile Ala Asp Glu Leu Met Ala Tyr His Asp Ile Val
130           135           140
Gly Ala Ser Tyr Val Ile Ser Thr Ala Cys Ser Ala Ser Asn Asn Ala
145           150           155           160
Val Ile Leu Gly Thr Gln Leu Leu Gln Asp Gly Asp Cys Asp Leu Ala
165           170           175
Ile Cys Gly Gly Cys Asp Glu Leu Ser Asp Ile Ser Leu Ala Gly Phe
180           185           190
Thr Ser Leu Gly Ala Ile Asn Thr Glu Met Ala Cys Gln Pro Tyr Ser
195           200           205
Ser Gly Lys Gly Ile Asn Leu Gly Glu Gly Ala Gly Phe Val Val Leu
210           215           220
Val Lys Asp Gln Ser Leu Ala Lys Tyr Gly Lys Ile Ile Gly Gly Leu
225           230           235           240
Ile Thr Ser Asp Gly Tyr His Ile Thr Ala Pro Lys Pro Thr Gly Glu
245           250           255
Gly Ala Ala Gln Ile Ala Lys Gln Leu Val Thr Gln Ala Gly Ile Asp
260           265           270

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Tyr Ser Glu Ile Asp Tyr Ile Asn Gly His Gly Thr Gly Thr Gln Ala  
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Thr Leu Ile Ser Ser Thr Lys Gly Gln Thr Gly His Thr Leu Gly Ala  
305 310 315 320  
Ala Gly Ile Ile Glu Leu Ile Asn Cys Leu Ala Ala Ile Glu Glu Gln  
325 330 335  
Thr Val Pro Ala Thr Lys Asn Glu Ile Gly Ile Glu Gly Phe Pro Glu  
340 345 350  
Asn Phe Val Tyr His Gln Lys Arg Glu Tyr Pro Ile Arg Asn Ala Leu  
355 360 365  
Asn Phe Ser Phe Ala Phe Gly Gly Asn Asn Ser Gly Val Leu Leu Ser  
370 375 380  
Ser Leu Asp Ser Pro Leu Glu Thr Leu Pro Ala Arg Glu Asn Leu Lys  
385 390 395 400  
Met Ala Ile Leu Ser Ser Val Ala Ser Ile Ser Lys Asn Glu Ser Leu  
405 410 415  
Ser Ile Thr Tyr Glu Lys Val Ala Ser Asn Phe Asn Asp Phe Glu Ala  
420 425 430  
Leu Arg Phe Lys Gly Ala Arg Pro Pro Lys Thr Val Asn Pro Ala Gln  
435 440 445  
Phe Arg Lys Met Asp Asp Phe Ser Lys Met Val Ala Val Thr Thr Ala  
450 455 460  
Gln Ala Leu Ile Glu Ser Asn Ile Asn Leu Lys Lys Gln Asp Thr Ser  
465 470 475 480  
Lys Val Gly Ile Val Phe Thr Thr Leu Ser Gly Pro Val Glu Val Val  
485 490 495  
Glu Gly Ile Glu Lys Gln Ile Thr Thr Glu Gly Tyr Ala His Val Ser  
500 505 510  
Ala Ser Arg Phe Pro Phe Thr Val Met Asn Ala Ala Ala Gly Met Leu  
515 520 525  
Ser Ile Ile Phe Lys Ile Thr Gly Pro Leu Ser Val Ile Ser Thr Asn  
530 535 540  
Ser Gly Ala Leu Asp Gly Ile Gln Tyr Ala Lys Glu Met Met Arg Asn  
545 550 555 560  
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565 570 575  
Met Ser Phe Met Trp Trp Gln Gln Leu Asn Tyr Asp Ser Gln Met Phe  
580 585 590  
Val Gly Ser Asp Tyr Cys Ser Ala Gln Val Leu Ser Arg Gln Ala Leu  
595 600 605  
Asp Asn Ser Pro Ile Ile Leu Gly Ser Lys Gln Leu Lys Tyr Ser His  
610 615 620  
Lys Thr Phe Thr Asp Val Met Thr Ile Phe Asp Ala Ala Leu Gln Asn  
625 630 635 640  
Leu Leu Ser Asp Leu Gly Leu Thr Ile Lys Asp Ile Lys Gly Phe Val  
645 650 655  
Trp Asn Glu Arg Lys Lys Ala Val Ser Ser Asp Tyr Asp Phe Leu Ala  
660 665 670  
Asn Leu Ser Glu Tyr Tyr Asn Met Pro Asn Leu Ala Ser Gly Gln Phe  
675 680 685  
Gly Phe Ser Ser Asn Gly Ala Gly Glu Glu Leu Asp Tyr Thr Val Asn  
690 695 700  
Glu Ser Ile Glu Lys Gly Tyr Tyr Leu Val Leu Ser Tyr Ser Ile Phe



705                      710                      715                      720  
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 <212> DNA  
 <213> Streptococcus agalactiae

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 agttggaaaa ccaagcttgt gggttttaatc atcttactgc tacttggcgg aggggggacta 180  
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 tctgttgata atagcgcaac gagagaacaa atcgatttgc ttaataaagt ccttggtca 300  
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 ggaccatttt attgttcagc agataaaaaa atctatcttg atatttcttt ttacaatgaa 480  
 ttatcacata aatatggtgc tactggtgat tttgctatgg cctacgtcat cgcccacgaa 540  
 gttggtcacc acattcaaac agagttaggc attatggata agtataatag aatgcgacac 600  
 ggacttacta agaaagaagc aaatgcttta aatgttcggc tagaacttca agcagattat 660  
 tatgcagggg tatgggctca ctacatcagg ggaaaaaatc tcttagaaca aggagacttt 720  
 gaagaggcca tgaatgctgc ccacgcgctc ggagacgata cccttcagaa agaaacctac 780  
 ggaaaattag tgctgatag ctttaccocat ggaacagctg aacaacgcca acgttggttt 840  
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<210> 30  
 <211> 300  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 30  
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           20                          25                          30  
 Leu Gln Leu Leu Leu Leu Arg Gly Ser Trp Lys Thr Lys Leu Val Val  
           35                          40                          45  
 Leu Ile Ile Leu Leu Leu Leu Gly Gly Gly Gly Leu Thr Ser Ile Phe  
           50                          55                          60  
 Asn Asp Ser Ser Ser Pro Ser Ser Tyr Gln Ser Gln Asn Val Ser Arg  
   65                          70                          75                          80  
 Ser Val Asp Asn Ser Ala Thr Arg Glu Gln Ile Asp Phe Val Asn Lys  
                           85                          90                          95  
 Val Leu Gly Ser Thr Glu Asp Phe Trp Ser Gln Glu Phe Gln Thr Gln  
           100                          105                          110  
 Gly Phe Gly Asn Tyr Lys Glu Pro Lys Leu Val Leu Tyr Thr Asn Ser  
           115                          120                          125  
 Ile Gln Thr Gly Cys Gly Ile Gly Glu Ser Ala Ser Gly Pro Phe Tyr  
           130                          135                          140  
 Cys Ser Ala Asp Lys Lys Ile Tyr Leu Asp Ile Ser Phe Tyr Asn Glu  
   145                          150                          155                          160  
 Leu Ser His Lys Tyr Gly Ala Thr Gly Asp Phe Ala Met Ala Tyr Val  
                           165                          170                          175  
 Ile Ala His Glu Val Gly His His Ile Gln Thr Glu Leu Gly Ile Met

	180		185		190
Asp Lys Tyr Asn Arg Met Arg His Gly Leu Thr Lys Lys Glu Ala Asn					
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Ala Leu Asn Val Arg Leu Glu Leu Gln Ala Asp Tyr Tyr Ala Gly Val					
210			215		220
Trp Ala His Tyr Ile Arg Gly Lys Asn Leu Leu Glu Gln Gly Asp Phe					
225			230		235
Glu Glu Ala Met Asn Ala Ala His Ala Val Gly Asp Asp Thr Leu Gln					
	245		250		255
Lys Glu Thr Tyr Gly Lys Leu Val Pro Asp Ser Phe Thr His Gly Thr					
	260		265		270
Ala Glu Gln Arg Gln Arg Trp Phe Asn Lys Gly Phe Gln Tyr Gly Asp					
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 ctaccatttc aatatgttaa tggatattat gaattaaata ataatcagac aaatttaaata 240  
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 aat 783

<210> 32  
 <211> 261  
 <212> PRT  
 <213> Streptococcus agalactiae

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 Thr Pro Ile Val His Ala Asp Val Asn Ser Ser Val Asp Thr Ser Gln  
 35 40 45  
 Glu Phe Gln Asn Asn Leu Lys Asn Ala Ile Gly Asn Leu Pro Phe Gln  
 50 55 60  
 Tyr Val Asn Gly Ile Tyr Glu Leu Asn Asn Asn Gln Thr Asn Leu Asn  
 65 70 75 80  
 Ala Asp Val Asn Val Lys Ala Tyr Val Gln Asn Thr Ile Asp Asn Gln  
 85 90 95

Gln Arg Leu Ser Thr Ala Asn Ala Met Leu Asp Arg Thr Ile Arg Gln  
 100 105 110  
 Tyr Gln Asn Arg Arg Asp Thr Thr Leu Pro Asp Ala Asn Trp Lys Pro  
 115 120 125  
 Leu Gly Trp His Gln Val Ala Thr Asn Asp His Tyr Gly His Ala Val  
 130 135 140  
 Asp Lys Gly His Leu Ile Ala Tyr Ala Leu Ala Gly Asn Phe Lys Gly  
 145 150 155 160  
 Trp Asp Ala Ser Val Ser Asn Pro Gln Asn Val Val Thr Gln Thr Ala  
 165 170 175  
 His Ser Asn Gln Ser Asn Gln Lys Ile Asn Arg Gly Gln Asn Tyr Tyr  
 180 185 190  
 Glu Ser Leu Val Arg Lys Ala Val Asp Gln Asn Lys Arg Val Arg Tyr  
 195 200 205  
 Arg Val Thr Pro Leu Tyr Arg Asn Asp Thr Asp Leu Val Pro Phe Ala  
 210 215 220  
 Met His Leu Glu Ala Lys Ser Gln Asp Gly Thr Leu Glu Phe Asn Val  
 225 230 235 240  
 Ala Ile Pro Asn Thr Gln Ala Ser Tyr Thr Met Asp Tyr Ala Thr Gly  
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 Glu Ile Thr Leu Asn  
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<210> 33  
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 <213> Streptococcus agalactiae

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 gcagtaaaaa ctaactacaa agtttttaat gttagagaag gaagtgtttc gtcctcaact 180  
 cttttgacag gaaaagctaa ggctaataca gaacagtatg tgtattttga tgctaataaa 240  
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 gttcaatatg atacaacaac tgcacaagca gcctacgaca ctgctaatacg tcaattaaat 360  
 aaagtagcgc gtcagattaa taatctaaag acaacaggaa gtcttccagc tatggaatca 420  
 agtgatcaat cttcttcac atcacaagga caagggactc aatcgactag tgggtgcgacg 480  
 aatcgtctac agcaaaatta tcaaagtcaa gctaattgctt catacaacca acaacttcaa 540  
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 aatgatactg ttattacaag tgacgtatca gggacagttg ttgaagttaa tagtgatatt 660  
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 tatccagaag cagaagcaaa caacaatgac tctaataacg gctctagtgc tgtaaattat 900  
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 gtcaaaattg gtaaagctga tgctaagaca caagaaattt tatcaggttt gaaagcagga 1140  
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<210> 34  
 <211> 414  
 <212> PRT  
 <213> Streptococcus agalactiae

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Val	Gln	Ser	Gln	Pro	Asn	Lys	Ser	Ala	Val	Lys	Thr	Asn	Tyr	Lys	Val
Phe	Asn	Val	Arg	Glu	Gly	Ser	Val	Ser	Ser	Ser	Thr	Leu	Leu	Thr	Gly
Lys 65	Ala	Lys	Ala	Asn 70	Gln	Glu	Gln	Tyr	Val	Tyr	Phe	Asp	Ala	Asn 80	Lys
Gly	Asn	Arg	Ala	Thr 85	Val	Thr	Val	Lys	Val	Gly	Asp	Lys	Ile	Thr 95	Ala
Gly	Gln	Gln	Leu	Val	Gln	Tyr	Asp	Thr 105	Thr	Thr	Ala	Gln	Ala	Ala	Tyr
Asp	Thr	Ala	Asn	Arg	Gln	Leu	Asn	Lys 120	Val	Ala	Arg	Gln	Ile	Asn	Asn
Leu	Lys	Thr	Thr	Gly	Ser	Leu	Pro	Ala	Met	Glu	Ser	Ser	Asp	Gln	Ser
Ser 145	Ser	Ser	Ser	Gln 150	Gly	Gln	Gly	Thr	Gln	Ser	Thr	Ser	Gly	Ala	Thr 160
Asn	Arg	Leu	Gln	Gln 165	Asn	Tyr	Gln	Ser	Gln	Ala	Asn	Ala	Ser	Tyr 175	Asn
Gln	Gln	Leu	Gln	Asp 180	Leu	Asn	Asp	Ala 185	Tyr	Ala	Asp	Ala	Gln	Ala	Glu
Val	Asn	Lys	Ala	Gln 195	Lys	Ala	Leu	Asn 200	Asp	Thr	Val	Ile	Thr	Ser	Asp
Val	Ser	Gly	Thr	Val	Val	Glu	Val	Asn 215	Ser	Asp	Ile	Asp	Pro	Ala	Ser
Lys 225	Thr	Ser	Gln	Val 230	Leu	Val	His	Val	Ala	Thr	Glu	Gly	Lys	Leu	Gln 240
Val	Gln	Gly	Thr	Met 245	Ser	Glu	Tyr	Asp	Leu	Ala	Asn	Val	Lys	Lys 255	Asp
Gln	Ala	Val	Lys	Ile 260	Lys	Ser	Lys	Val 265	Tyr	Pro	Asp	Lys	Glu	Trp	Glu
Gly	Lys	Ile	Ser	Tyr	Ile	Ser	Asn	Tyr 280	Pro	Glu	Ala	Glu	Ala	Asn	Asn
Asn	Asp	Ser	Asn	Asn	Gly	Ser	Ser	Ala	Val	Asn	Tyr	Lys	Tyr	Lys	Val
Asp 305	Ile	Thr	Ser	Pro 310	Leu	Asp	Ala	Leu	Lys	Gln	Gly	Phe	Thr	Val	Ser 320
Val	Glu	Val	Val	Asn 325	Gly	Asp	Lys	His	Leu	Ile	Val	Pro	Thr	Ser	Ser
Val	Ile	Asn	Lys	Asp 340	Asn	Lys	His	Phe 345	Val	Trp	Val	Tyr	Asn	Asp	Ser
Asn	Arg	Lys	Ile	Ser	Lys	Val	Glu	Val	Lys	Ile	Gly	Lys	Ala	Asp	Ala
Lys	Thr	Gln	Glu	Ile	Leu	Ser	Gly	Leu	Lys	Ala	Gly	Gln	Ile	Val	Val
Thr 385	Asn	Pro	Ser	Lys 390	Thr	Phe	Lys	Asp	Gly	Gln	Lys	Ile	Asp	Asn	Ile 400
Glu	Ser	Ile	Asp	Leu 405	Asn	Ser	Asn	Lys	Lys	Ser	Glu	Val	Lys		

<210> 35  
 <211> 930  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 35  
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 caacaaacta aacaagaaag cactaaaaca actattttcta aaatgcctaa aattgaaggc 120  
 ttcacctatt atggaaaaat tcttgaaaat ccgaaaaaag taattaattt tacatattct 180  
 tacactgggt atttattaaa actaggtggt aatggttcaa gttacagttt agacttagaa 240  
 aaagatagcc ccgttttttg taaacaactg aaagaagcta aaaaattaac tgctgatgat 300  
 acagaagcta ttgccgcaca aaaacctgat ttaatcatgg ttttcgatca agatccaaac 360  
 atcaatactc tgaaaaaaat tgcaccaact ttagttatta aatatgggtgc acaaaattat 420  
 ttagatatga tgccagcctt ggggaaagta ttcggtaaag aaaaagaagc taatcagtgg 480  
 gttagccaat ggaaaactaa aactctcgct gtcaaaaaag atttacacca tatcttaaag 540  
 cctaactacta cttttactat tatggatttt tatgataaaa atatctattt atatggtaat 600  
 aattttggac gcggtggaga actaatctat gattcactag gttatgctgc cccagaaaaa 660  
 gtcaaaaaag atgtctttta aaaaggggtgg tttaccgttt cgcaagaagc aatcgggtgat 720  
 tacgttggag attatgccct tgtaatatata aacaaaacga ctaaaaaagc agcttcatca 780  
 cttaaagaaa gtgatgtctg gaagaattta ccagctgtca aaaaagggca catcatagaa 840  
 agtaactacg acgtgtttta tttctctgac cctctatctt tagaagctca attaaaatca 900  
 ttacaaaagg ctatcaaaga aaatacaaat 930

<210> 36  
 <211> 310  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 36  
 Met Lys Lys Ile Gly Ile Ile Val Leu Thr Leu Leu Thr Phe Phe Leu  
 1 5 10 15  
 Val Ser Cys Gly Gln Gln Thr Lys Gln Glu Ser Thr Lys Thr Thr Ile  
 20 25 30  
 Ser Lys Met Pro Lys Ile Glu Gly Phe Thr Tyr Tyr Gly Lys Ile Pro  
 35 40 45  
 Glu Asn Pro Lys Lys Val Ile Asn Phe Thr Tyr Ser Tyr Thr Gly Tyr  
 50 55 60  
 Leu Leu Lys Leu Gly Val Asn Val Ser Ser Tyr Ser Leu Asp Leu Glu  
 65 70 75 80  
 Lys Asp Ser Pro Val Phe Gly Lys Gln Leu Lys Glu Ala Lys Lys Leu  
 85 90 95  
 Thr Ala Asp Asp Thr Glu Ala Ile Ala Ala Gln Lys Pro Asp Leu Ile  
 100 105 110  
 Met Val Phe Asp Gln Asp Pro Asn Ile Asn Thr Leu Lys Lys Ile Ala  
 115 120 125  
 Pro Thr Leu Val Ile Lys Tyr Gly Ala Gln Asn Tyr Leu Asp Met Met  
 130 135 140  
 Pro Ala Leu Gly Lys Val Phe Gly Lys Glu Lys Glu Ala Asn Gln Trp  
 145 150 155 160  
 Val Ser Gln Trp Lys Thr Lys Thr Leu Ala Val Lys Lys Asp Leu His  
 165 170 175  
 His Ile Leu Lys Pro Asn Thr Thr Phe Thr Ile Met Asp Phe Tyr Asp  
 180 185 190  
 Lys Asn Ile Tyr Leu Tyr Gly Asn Asn Phe Gly Arg Gly Gly Glu Leu  
 195 200 205

Ile Tyr Asp Ser Leu Gly Tyr Ala Ala Pro Glu Lys Val Lys Lys Asp  
 210 215 220  
 Val Phe Lys Lys Gly Trp Phe Thr Val Ser Gln Glu Ala Ile Gly Asp  
 225 230 235 240  
 Tyr Val Gly Asp Tyr Ala Leu Val Asn Ile Asn Lys Thr Thr Lys Lys  
 245 250 255  
 Ala Ala Ser Ser Leu Lys Glu Ser Asp Val Trp Lys Asn Leu Pro Ala  
 260 265 270  
 Val Lys Lys Gly His Ile Ile Glu Ser Asn Tyr Asp Val Phe Tyr Phe  
 275 280 285  
 Ser Asp Pro Leu Ser Leu Glu Ala Gln Leu Lys Ser Phe Thr Lys Ala  
 290 295 300  
 Ile Lys Glu Asn Thr Asn  
 305 310

<210> 37  
 <211> 576  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 37  
 atgaaagtga aaaataagat ttttaacgatg gtagcactta ctgtcttaac atgtgctact 60  
 tattcatcaa tcggttatgc tgatacaagt gataagaata ctgacacgag tgtcgtgact 120  
 acgaccttat ctgaggagaa aagatcagat gaactagacc agtctagtac tggttcttct 180  
 tctgaaaatg aatcgagttc atcaagtga ccagaaacaa atccgtcaac taatccacct 240  
 acaacagaac catcgcaacc ctcacctagt gaagagaaca agcctgatgg tagaacgaag 300  
 acagaaattg gcaataataa ggatatttct agtgggaaca aagtattaat ttcagaagat 360  
 agtattaaga attttagtaa agcaagtagt gatcaagaag aagtggatcg cgatgaatca 420  
 tcatcttcaa aagcaaataa tgggaaaaaa ggccacagta agcctaaaaa ggaacttcct 480  
 aaaacaggag atagccactc agatactgta atagcatcta cgggagggat tattctgtta 540  
 tcattaagtt tttacaataa gaaaatgaaa ctttat 576

<210> 38  
 <211> 192  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 38  
 Met Lys Val Lys Asn Lys Ile Leu Thr Met Val Ala Leu Thr Val Leu  
 1 5 10 15  
 Thr Cys Ala Thr Tyr Ser Ser Ile Gly Tyr Ala Asp Thr Ser Asp Lys  
 20 25 30  
 Asn Thr Asp Thr Ser Val Val Thr Thr Leu Ser Glu Glu Lys Arg  
 35 40 45  
 Ser Asp Glu Leu Asp Gln Ser Ser Thr Gly Ser Ser Glu Asn Glu  
 50 55 60  
 Ser Ser Ser Ser Glu Pro Glu Thr Asn Pro Ser Thr Asn Pro Pro  
 65 70 75 80  
 Thr Thr Glu Pro Ser Gln Pro Ser Pro Ser Glu Glu Asn Lys Pro Asp  
 85 90 95  
 Gly Arg Thr Lys Thr Glu Ile Gly Asn Asn Lys Asp Ile Ser Ser Gly  
 100 105 110  
 Thr Lys Val Leu Ile Ser Glu Asp Ser Ile Lys Asn Phe Ser Lys Ala  
 115 120 125  
 Ser Ser Asp Gln Glu Glu Val Asp Arg Asp Glu Ser Ser Ser Ser Lys

130                      135                      140  
 Ala Asn Asp Gly Lys Lys Gly His Ser Lys Pro Lys Lys Glu Leu Pro  
 145                      150                      155                      160  
 Lys Thr Gly Asp Ser His Ser Asp Thr Val Ile Ala Ser Thr Gly Gly  
 165                      170                      175  
 Ile Ile Leu Leu Ser Leu Ser Phe Tyr Asn Lys Lys Met Lys Leu Tyr  
 180                      185                      190

<210> 39  
 <211> 924  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 39  
 atgaaaagga tacggaaaag ccttattttt gttctcggag tagttaccct aatttgctta 60  
 tgtgcttgta ctaaacaaag ccagcaaaaa aatggcttgt cagtagtgac tagcttttat 120  
 ccagtatatt ccattacaaa agcagtttct ggtgatttga atgatattaa aatgattcga 180  
 tcacagtcag gtattcatgg ttttgaaccc tcatcaagtg atgttgctgc catttatgat 240  
 gctgatctat ttcttttatca ttgcacaca ctagaagctt gggcgagacg tttggaacct 300  
 agtttgcac actctaaagt atctgtaatt gaagcttcaa aaggtagtac tttggataaa 360  
 gttcatggct tagaagatgt agaggcagaa aaaggagtag atgagtcaac ctgtatgac 420  
 cctcacactt ggaatgaccc tgtaaaagta tctgaggaag cacaactcat cgctacacaa 480  
 ttagctaaaa aggatcctaa aaacgctaag gtttatcaaa aaaatgctga tcaatttagt 540  
 gacaaggcaa tggctatttc agagaagtat aagccaaaat ttaaagctgc aaagtctaaa 600  
 tactttgtga cttcacatac agcattctca tacttagcta agcgatacgg attgactcag 660  
 ttaggtattg caggtgtctc aaccgagcaa gaacctagtg ctaaaaaatt agccgaaatt 720  
 caggagtttg tgaaaacata taaggttaag actatttttg ttgaagaagg agtctcacct 780  
 aaattagctc aagcagtagc ttcagctact cgagttaaaa ttgcaagttt aagtccttta 840  
 raagcagttc ccaaaaacaa taaagattac ttagaaaatt tggaaactaa tcttaaggta 900  
 cttgtcaaat cgttaaatca atag 924

<210> 40  
 <211> 307  
 <212> PRT  
 <213> Streptococcus agalactiae

<220>  
 <221> VARIANT  
 <222> (1)...(307)  
 <223> Xaa = Any Amino Acid

<400> 40  
 Met Lys Arg Ile Arg Lys Ser Leu Ile Phe Val Leu Gly Val Val Thr  
 1                      5                      10                      15  
 Leu Ile Cys Leu Cys Ala Cys Thr Lys Gln Ser Gln Gln Lys Asn Gly  
 20                      25                      30  
 Leu Ser Val Val Thr Ser Phe Tyr Pro Val Tyr Ser Ile Thr Lys Ala  
 35                      40                      45  
 Val Ser Gly Asp Leu Asn Asp Ile Lys Met Ile Arg Ser Gln Ser Gly  
 50                      55                      60  
 Ile His Gly Phe Glu Pro Ser Ser Ser Asp Val Ala Ala Ile Tyr Asp  
 65                      70                      75                      80  
 Ala Asp Leu Phe Leu Tyr His Ser His Thr Leu Glu Ala Trp Ala Arg  
 85                      90                      95  
 Arg Leu Glu Pro Ser Leu His His Ser Lys Val Ser Val Ile Glu Ala

	100		105		110										
Ser	Lys	Gly	Met	Thr	Leu	Asp	Lys	Val	His	Gly	Leu	Glu	Asp	Val	Glu
	115						120					125			
Ala	Glu	Lys	Gly	Val	Asp	Glu	Ser	Thr	Leu	Tyr	Asp	Pro	His	Thr	Trp
	130						135					140			
Asn	Asp	Pro	Val	Lys	Val	Ser	Glu	Glu	Ala	Gln	Leu	Ile	Ala	Thr	Gln
	145				150					155					160
Leu	Ala	Lys	Lys	Asp	Pro	Lys	Asn	Ala	Lys	Val	Tyr	Gln	Lys	Asn	Ala
			165						170					175	
Asp	Gln	Phe	Ser	Asp	Lys	Ala	Met	Ala	Ile	Ala	Glu	Lys	Tyr	Lys	Pro
	180							185					190		
Lys	Phe	Lys	Ala	Ala	Lys	Ser	Lys	Tyr	Phe	Val	Thr	Ser	His	Thr	Ala
	195						200					205			
Phe	Ser	Tyr	Leu	Ala	Lys	Arg	Tyr	Gly	Leu	Thr	Gln	Leu	Gly	Ile	Ala
	210					215					220				
Gly	Val	Ser	Thr	Glu	Gln	Glu	Pro	Ser	Ala	Lys	Lys	Leu	Ala	Glu	Ile
	225				230					235					240
Gln	Glu	Phe	Val	Lys	Thr	Tyr	Lys	Val	Lys	Thr	Ile	Phe	Val	Glu	Glu
			245					250						255	
Gly	Val	Ser	Pro	Lys	Leu	Ala	Gln	Ala	Val	Ala	Ser	Ala	Thr	Arg	Val
			260					265					270		
Lys	Ile	Ala	Ser	Leu	Ser	Pro	Leu	Xaa	Ala	Val	Pro	Lys	Asn	Asn	Lys
	275						280						285		
Asp	Tyr	Leu	Glu	Asn	Leu	Glu	Thr	Asn	Leu	Lys	Val	Leu	Val	Lys	Ser
	290					295					300				
Leu	Asn	Gln													
	305														

<210> 41  
 <211> 1134  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 41  
 atgcctaaga agaaatcaga taccacagaa aaagaagaag ttgtcttaac ggaatggcaa 60  
 aagcgtaacc ttgaattttt aaaaaaacgc aaagaagatg aagaagaaca aaaacgtatt 120  
 aacgaaaaat tacgcttaga taaaagaagt aaattaaata tttcttctcc tgaagaacct 180  
 caaaatacta ctaaaattaa gaagcttcat tttccaaaga tttcaagacc taagattgaa 240  
 aagaacacaga aaaaagaaaa aatagtcaac agcttagcca aaactaatcg cattagaact 300  
 gcacctatat ttgtagtagc attcctagtc attttagttt ccgttttcct actaactcct 360  
 ttttagtaagc aaaaaacaat aacagttagt ggaaatcagc atacacctga tgatattttg 420  
 atagagaaaa cgaatattca aaaaaacgat tatttctttt ctttaatttt taaacataaa 480  
 gctattgaac aacgttttagc tgcagaagat gtatgggttaa aaacagctca gatgacttat 540  
 caatttccca ataagtttca tattcaagtt caagaaaata agattattgc atatgcacat 600  
 acaaagcaag gatatcaacc tgtcttggaa actggaaaaa aggctgatcc tgtaaatagt 660  
 tcagagctac caaagcactt cttaacaatt aaccttgata aggaagatag tattaagcta 720  
 ttaattaaag atttaaaggc ttttagaccct gatttaataa gtgagattca ggtgataagt 780  
 ttagctgatt ctaaaacgac acctgacctc ctgctgtagg atatgcacga tggaaatagt 840  
 attagaatac cattatctaa atttaaagaa agacttcctt tttacaaaca aattaagaag 900  
 aaccttaagg aaccttctat tgttgatag gaagtgggag tttacacaac aacaaatacc 960  
 attgaatcaa cccctgttaa agcagaagat acaaaaaata aatcaactga taaaacacaa 1020  
 acacaaaatg gtcaggttgc ggaaaatagt caaggacaaa caaataactc aaataactat 1080  
 caacaaggac aacagatagc aacagagcag gcacctaac ctcaaatgt taat 1134

<210> 42



<211> 378

<212> PRT

<213> Streptococcus agalactiae

<400> 42

Met	Pro	Lys	Lys	Lys	Ser	Asp	Thr	Pro	Glu	Lys	Glu	Glu	Val	Val	Leu
1				5					10					15	
Thr	Glu	Trp	Gln	Lys	Arg	Asn	Leu	Glu	Phe	Leu	Lys	Lys	Arg	Lys	Glu
			20					25					30		
Asp	Glu	Glu	Gln	Lys	Arg	Ile	Asn	Glu	Lys	Leu	Arg	Leu	Asp	Lys	
		35				40					45				
Arg	Ser	Lys	Leu	Asn	Ile	Ser	Ser	Pro	Glu	Glu	Pro	Gln	Asn	Thr	Thr
	50					55					60				
Lys	Ile	Lys	Lys	Leu	His	Phe	Pro	Lys	Ile	Ser	Arg	Pro	Lys	Ile	Glu
65					70					75					80
Lys	Lys	Gln	Lys	Lys	Glu	Lys	Ile	Val	Asn	Ser	Leu	Ala	Lys	Thr	Asn
				85					90					95	
Arg	Ile	Arg	Thr	Ala	Pro	Ile	Phe	Val	Val	Ala	Phe	Leu	Val	Ile	Leu
			100					105					110		
Val	Ser	Val	Phe	Leu	Leu	Thr	Pro	Phe	Ser	Lys	Gln	Lys	Thr	Ile	Thr
		115					120					125			
Val	Ser	Gly	Asn	Gln	His	Thr	Pro	Asp	Asp	Ile	Leu	Ile	Glu	Lys	Thr
	130					135					140				
Asn	Ile	Gln	Lys	Asn	Asp	Tyr	Phe	Phe	Ser	Leu	Ile	Phe	Lys	His	Lys
145					150					155					160
Ala	Ile	Glu	Gln	Arg	Leu	Ala	Ala	Glu	Asp	Val	Trp	Val	Lys	Thr	Ala
				165					170					175	
Gln	Met	Thr	Tyr	Gln	Phe	Pro	Asn	Lys	Phe	His	Ile	Gln	Val	Gln	Glu
			180					185					190		
Asn	Lys	Ile	Ile	Ala	Tyr	Ala	His	Thr	Lys	Gln	Gly	Tyr	Gln	Pro	Val
		195					200					205			
Leu	Glu	Thr	Gly	Lys	Lys	Ala	Asp	Pro	Val	Asn	Ser	Ser	Glu	Leu	Pro
	210					215					220				
Lys	His	Phe	Leu	Thr	Ile	Asn	Leu	Asp	Lys	Glu	Asp	Ser	Ile	Lys	Leu
225					230					235					240
Leu	Ile	Lys	Asp	Leu	Lys	Ala	Leu	Asp	Pro	Asp	Leu	Ile	Ser	Glu	Ile
				245					250					255	
Gln	Val	Ile	Ser	Leu	Ala	Asp	Ser	Lys	Thr	Thr	Pro	Asp	Leu	Leu	Leu
			260					265					270		
Leu	Asp	Met	His	Asp	Gly	Asn	Ser	Ile	Arg	Ile	Pro	Leu	Ser	Lys	Phe
		275					280					285			
Lys	Glu	Arg	Leu	Pro	Phe	Tyr	Lys	Gln	Ile	Lys	Lys	Asn	Leu	Lys	Glu
	290					295					300				
Pro	Ser	Ile	Val	Asp	Met	Glu	Val	Gly	Val	Tyr	Thr	Thr	Thr	Asn	Thr
305					310					315					320
Ile	Glu	Ser	Thr	Pro	Val	Lys	Ala	Glu	Asp	Thr	Lys	Asn	Lys	Ser	Thr
				325					330					335	
Asp	Lys	Thr	Gln	Thr	Gln	Asn	Gly	Gln	Val	Ala	Glu	Asn	Ser	Gln	Gly
			340					345					350		
Gln	Thr	Asn	Asn	Ser	Asn	Thr	Asn	Gln	Gln	Gly	Gln	Gln	Ile	Ala	Thr
		355					360						365		
Glu	Gln	Ala	Pro	Asn	Pro	Gln	Asn	Val	Asn						
		370					375								